in 1.20 HNO_3, washed in distilled water, and again placed in the salt solution, it is found that the time now required for activation is not shorter but is essentially the same as before, *i. e.*, 8 to 10 seconds. Evidently the brief exposure to the acid has restored the partly altered film to its original condition. But if the process of alteration in salt solution is allowed to pass the critical stage (with, *e. g.*, 10 seconds exposure) before transfer to the acid, the latter has no passivating action, and the wire continues to react until completely dissolved. This observation shows that the progressive modification which the film undergoes in the salt solution is of a kind which is rapidly and completely reversible if the metal is returned to the acid before a certain critical stage is reached; but after this stage is once passed the whole film breaks down when the wire is replaced in acid and the iron is no longer protected against solution. This behavior resembles that of living cells after transfer from a balanced salt-solution like sea water to a toxic solution like pure $m/2$ NaCl, as shown (*e. g.*) in Osterhout's experiments with *Laminaria;* the cells undergo a progressively injurious modification associated with an alteration in the properties of the plasma-membranes, shown by increasing permeability; this change may be reversed by transfer to the original medium before, but not after, the modification has reached a certain critical stage. Thus the characteristic power, normally possessed by the living plasma-membrane, of preserving intact its continuity and semi-permeability is simulated in a general manner by the behavior of the surface-film of passive iron in dilute nitric acid.

The action of salt-solutions upon those surface-films (influence of nature and concentration of salts, relative rates of action of different salts, antagonisms) will be described more fully in the second part of this article.

RALPH S. LILLIE

SOCIETIES AND ACADEMIES

THE NORTH CAROLINA ACADEMY OF SCIENCE

THE annual meeting of the North Carolina Academy of Science was held at Trinity College, Durham, on May 2 and 3.

The presidential address was given by Dr. E. W. Gudger on "On an extraordinary method of fishing—the use of remora for catching fish and turtles."

The following papers were presented:

Undamped electrical oscillations: C. W. EDWARDS.

A portable printing outfit for the ecologist: Z. P. METCALF.

Sanitation in the south: THORNDIKE SAVILLE.

Some generic distinctions in sponges: H. V. WILSON.

A magnetic paradox: F. N. EDGERTON, JR.

Vegetation in the closing of ponds with special reference to the Kamaplain ponds of Wexford county, Michigan: COLLIER COBB and H. D. HOUSE.

Preliminary studies of the reproduction rate of Copepoda: FANNIE E. VANN.

Deposits of volcanic ash: JOHN E. SMITH (by title).

Asymmetry in the formation of the nervous system in the frog embryo: BLACKWELL MARKHAM.

Recent mosquito control work in North Carolina: R. W. LEIBY.

Reptilian folklore: C. S. BRIMLEY.

New or little known diatoms from Beaufort, North Carolina: J. J. WOLFE.

Some notes on Protozoa:

(a) *Occurrence of Tintinnus serratus Kofoid in Chesapeake Bay.*

(b) *Arcella excavata nov. sp.:* BERT CUNNINGHAM.

The ovary of the Gaff-topsail catfish, Felichthys felis: E. W. GUDGER.

The seventeen-year locust in North Carolina in 1917: Z. P. METCALF.

Our rats, mice and shrews: C. S. BRIMLEY.

The high frequency electric furnace: F. N. EGERTON, JR.

The felsites of Mount Collier: JOHN E. SMITH (by title).

The inland waterway from Boston to Beaufort: COLLIER COBB.

(a) *A new parasitic blue-green alga.*

(b) *Comparison of Rhododendron catawbiense with a form occurring at Chapel Hill:* W. C. COOKER.

Locating invisible objects: C. C. HATLEY.

BERT CUNNINGHAM,
Secretary

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